In the Claims:

1. (Withdrawn) An interlayer for placement on a road, comprising a mixture of:

aggregate; and

an asphalt binder, wherein said interlayer has a Hveen Stability at 60°C and 50 gyrations of at least about 18 and a Flexural Beam Fatigue of at least about 100,000 cycles at 2000 microstrains, 10 Hz, about 2-4% air voids, and at temperature of about 0 to 30°C.

2. (Withdrawn) The interlayer of claim 1, wherein about 100% of said aggregate is able to pass through about a 9.5 mm sieve.

3. (Withdrawn) The interlayer of claim 1, wherein said asphalt binder is a polymermodified asphalt binder.

4. (Withdrawn) The interlayer of claim 3, wherein said binder further comprises a cross-linking agent that has reacted with said polymer.

5. (Withdrawn) The interlayer of claim 4, wherein said asphalt is about 80-99% by weight of said binder, said polymer is about 1-20% by weight of said binder, and said cross-linking agent is about 0 to 2% by weight of said binder.

6. (Withdrawn) The interlayer of claim 1, wherein said binder further comprises an asphalt extender.

7. (Withdrawn) The interlayer of claim 1, wherein said interlayer is about 0.5 to 2 inches thick on said road.

8. (Withdrawn) The interlayer of claim 1, wherein said binder is chosen based on the climate.

9. (Withdrawn) The interlayer of claim 8, wherein said binder is chosen from a Type I binder for Northern climates, a Type II binder for Central climates, and a Type III binder for Southern climates.

10. (Withdrawn) The interlayer of claim 1, wherein a type I binder is chosen so that the complex shear modulus divided by the sine of the phase angle of said binder is at least about 2.2 KPa on RTFO residue when measured at a temperature of at least 52°C, the creep stiffness of said binder at 60 seconds as measured on the BBR using PAV-aged residue is less than 300 MPa at a maximum of about –28°C, and said ductility at 4°C on RTFO residue at 5 cm/min strain rate is at least about 30 cm, when using straight-sided molds.

11. (Withdrawn) The interlayer of claim 1, wherein a Type II binder is chosen so that the complex shear modulus divided by the sine of the phase angle of said binder least about 2.2 KPa on RTFO residue when measured at a temperature of at least 52°C, the creep stiffness of said binder at 60 seconds as measured on the BBR using PAV-aged residue is less than 300 Mpa at a maximum of about –22°C, and said ductility at 4°C on RTFO residue at 5 cm/min strain rate is at least about 20 cm, when using straight-sided molds.

12. (Withdrawn) The interlayer of claim 1, wherein a Type III binder is chosen so that the complex shear modulus divided by the sine of the phase angle of said binder is at least about 2.2 KPa of RTFO residue when measured at a temperature of at least 52°C, the creep stiffness of said binder at 60 seconds as measured on the BBR using PAV-aged residue is less than 300 Mpa at a

maximum of about –16°C, and said ductility at 4°C on RTFO residue at 5 cm/min strain rate is at least about 10 cm, when using straight-sided molds.

13. (Withdrawn) The interlayer of claim 12, wherein the viscosity of said binder is less than about 3000 cPs.

14. (Withdrawn) The interlayer of claim 1, wherein the viscosity of said binder is less than about 2500 cPs.

15. (Withdrawn) The interlayer of claim 1, wherein said interlayer has a maximum of about 2.5% air voids.

16. (Withdrawn) The interlayer of claim 1, wherein said interlayer has a VMA of at least about 16%.

17. (Withdrawn). The interlayer of claim 1, wherein said interlayer is substantially impermeable.

18. (Withdrawn) The interlayer of claim 1, wherein said interlayer is recyclable.

19-36. (Cancelled)

37. (New) A method of making an interlayer on a roadway, comprising:

providing a polymer-modified asphalt comprised of a binder and aggregate;

performing a stability test on said polymer-modified asphalt;

performing a fatigue test on said polymer-modified asphalt; and

designing said interlayer for said roadway based on said stability and fatigue tests of said polymer-modified asphalt.

38. (New) The method of claim 37, wherein said stability test is a Hveem Stability test and wherein said polymer-modified asphalt has a Hveem Stability at 60°C and 50 gyrations of at least about 18.

39. (New) The method of claim 37, wherein said fatigue test is a Flexural Beam Fatigue Test and said polymer-modified asphalt has a Flexural Beam Fatigue of at least about 100,000 cycles at 2000 microstrains, 10 Hz, about 2-4% air voids, and at a temperature of about 0 to 30°C.

40. (New) The method of claim 37, further comprising:

adding a cross-linking agent to said binder before performing said stability and fatigue tests on said polymer-modified asphalt.

41. (New) The method of claim 37, wherein polymer is mixed with said binder under low shear blending conditions.

42. (New) The method of claim 37, further comprising:

determining the shear modulus, strain tolerance, and the bending creep stiffness of said binder.

43. (New) The method of claim 37, further comprising:

determining the rotational viscosity of said binder.

44. (New) The method of claim 37, further comprising:

performing volumetric testing on said polymer-modified asphalt.

45. (New) A method of reconstructing a roadway comprised of an interlayer and an overlay, said method comprising:

providing a polymer-modified asphalt comprised of a binder and aggregate;

performing a stability test on said polymer-modified asphalt;

performing a fatigue test on said polymer-modified asphalt;

designing said interlayer for said roadway based on said stability and fatigue tests of said polymer-modified asphalt;

applying said interlayer to said roadway;

determining a desired thickness of said overlay based on traffic levels; and

applying said overlay to said interlayer in said desired thickness.

46. (New) The method of claim 45, wherein said interlayer is applied at a temperature above about 140°F and is cooled to below about 140°F before applying said overlay.

47. (New) The method of claim 45, wherein said roadway is comprised of Portland Concrete Cement.

48. (New) The method of claim 45, further comprising:

sweeping said roadway; and

sealing cracks in said roadway before applying said interlayer.

49. (New) The method of claim 45, wherein said overlay is at least about 1 inch thick.

50. (New) The method of claim 45, further comprising:

allowing traffic to drive on said interlayer before applying said overlay.

51. (New) The method of claim 45, wherein said overlay is comprised of hot mix asphalt.

52. (New) The method of claim 51, wherein overlay is further comprised of a SB/SBS polymer modified asphalt binder.

53. (New) The method of claim 45, further comprising:

performing volumetric testing on said polymer-modified asphalt.

54. (New) The method of claim 50, wherein said interlayer is cooled to below about 140°F before releasing said interlayer to traffic.